

Application No. 10/723,397

Amendment Date December 31, 2007; Reply to Office Action of October 4, 2007

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Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A fast high precision matching method comprising the steps of:

- a) Input an image;
- b) Input a template;
- c) Perform initial search using the input image and the template based on a matching function to create an initial search result output;
- d) Create high precision matching function by interpolating the matching function making it as a function of subpixel values or invariant high precision parameters;
- e) ~~d)~~ Perform high precision match ~~based on a matching function of subpixel values or invariant high precision parameters~~ by high precision matching function maximization directly using the initial search result from the step (c), the input image, and the same template from step (b) to create a high precision match result output.

Claims 2-5 (canceled).

Claim 6 (currently amended): The method of claim 1 wherein the high precision match step performs robust matching limits pixel contribution with maximum allowable value for a pixel and multiple within one pixel range high precision matches can be used if the initial search result includes multiple candidate positions.

Claims 7-10 (canceled).

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Claim 11 (currently amended): The method of claim ~~21~~ wherein the ~~interpolation parameter optimization includes a~~ matching function maximization for the subpixel values or invariant high precision parameters is performed using optimization methods.

Claims 12 -13 (canceled).

Claim 14 (currently amended): A fast high precision matching method comprising the steps of:

- a) Input an image;
- b) Input a template containing pre-calculated template variance parameters;
- c) Perform initial search using the input image and the template based on a matching function to create an initial search result output;
- d) Create high precision matching function by interpolating the matching function making it as a function of subpixel values or invariant high precision parameters;
- e) ~~d)~~ Perform high precision match ~~based on a matching function of subpixel values or invariant high precision parameters by high precision matching function maximization directly~~ using the initial search result from step (c), the input image, and the same template from step (b) to create a high precision match result output.

Claims 15-16 (canceled).

Claim 17 (currently amended): A fast high precision projection matching method comprising the steps of:

- a) Input a projection profile;
- b) Input a template profile;
- c) Create high precision matching function by interpolating matching function making it as a function of subpixel values or or subsampling parameters;

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- d) e) Perform high precision match ~~based on a matching function of subpixel values or subsampling parameters~~ by high precision matching function maximization using the projection profile, the same template profile from step (b) to create a high precision projection match result output.

Claims 18-19 (canceled).

Claim 20 (currently amended): A fast invariant high precision matching method comprising the steps of:

- a) Input an image;
- b) Input a template;
- c) Perform initial search using the input image and the template based on a matching function to create an initial search result output;
- d) Create high precision matching function by interpolating the matching function making it as a function of subpixel values or invariant high precision parameters;
- e) d) Perform invariant high precision match ~~based on a matching function of subpixel values or invariant high precision parameters~~ by high precision matching function maximization directly using the initial search result from step (c), the input image, and the same template from step (b) to create an invariant high precision match result output.

Claims 21-22 (canceled).

Claim 23 (currently amended): The method of claim ~~21~~20 wherein interpolating the matching function ~~image interpolation~~ includes log-converted radial-angular transformation and linear interpolation.

Claims 24-27 (canceled).